## APPENDIX A

### FIELD TESTING

ITM 506 – Soil Field Moisture Content Determination

AASHTO T 191 - Density of Soil In-Place by the Sand Cone Method

AASHTO T 217 - Moisture in Soils by Means of Calcium Carbide Gas Pressure Moisture Tester

AASHTO T 224 - Correction for Coarse Particles in the Soil Compaction Test

AASHTO T 255 – Total Evaporable Moisture Content of Aggregate by Drying

AASHTO T 272 – Family of Curves One Point Method

AASHTO T 310 - Density of Soil and Soil-Aggregate In-Place by Nuclear Methods

### NOTE:

- Method (ITM). Technicians should obtain the latest versions of the official AASHTO test methods and Indiana Test
- 2 Technician Program" manual. Technicians should obtain the latest procedural checklists from the "Qualified Laboratory and
- $\dot{\omega}$ information for hands-on training purposes, but no test questions will be specifically derived from this through the M-Trac program (CD-August 1999) is available on the INDOT "Y-drive" at "Y:\CRAWFORDSVILLE\Testing\FHWA Soils CD 08-28-02\SOILS.pdf". This is useful For some of the listed AASHTO test methods, a training version that was developed by the FHWA

Rev. 10/02

## DAILY SUMMARY OF NUCLEAR DENSITY TESTS FOR SOIL INDIANA DPEARTMENT OF TRANSPORTATION

| Contra               | Contract Number                                    | Project Number   | Road Number  |
|----------------------|--|--|--------------|
| Date:                |  |  |              |
| Field T              | Field Test Number                                  |  |              |
|                      |  | Station  |              |
| Location             | Location of Tests                                  | Reference to Centerline  |              |
|                      |  | Elevation or Lift Number   |              |
| Compa                | Compacted Depth of Lift                            | of Lift  |              |
| Method               | Method of Compaction                               | tion   |              |
| Numbe                | Number of Passes with Roller                       | with Roller  |              |
|                      | 1. Daily S   | Daily Standard Count   |              |
|                      | 2. Wet De  | Wet Density From Gauge (0.1 lbs./ft³)  |              |
|                      | 3. Dry De  | Dry Density From Gauge (for information only)                                    |              |
|                      | 4. Percen  | Percent Moisture from Gauge (for information only)                               |              |
| uge                  | 5. Percen  | Percent Moisture (0.1%) from TD 250  |              |
| · Gaı                | 6. Dry De  | Dry Density (0.1 lbs./ft³) line 2 / (1+ (line 5 / 100))                          |              |
| clear                | 7. Adj. Dr   | Adj. Dry Dens. (-No.4) (0.1 lbs. /ft³) line 20 / line 19                         |              |
| Nuc                  | 8. Maximu  | Maximum Dry Density from Lab or 1 Pt. Proctor                                    |              |
|                      | 9. Adjuste   | Adjusted % Moisture (-No.4) (0.1%) line 17 x 100                                 |              |
|                      | 10. Optimu   | 10. Optimum Moisture (0.1%)  |              |
|                      | 11. Percen   | 11. Percent Compaction <sup>(1)</sup> (1%)                                       |              |
|                      | 12. Percen   | 12. Percent Compaction Required (1%)   |              |
|                      |  | Pass/ Fail   |              |
| Test                 | Test Remarks                                       | Lab Sample Number  |              |
|                      |  | Material Description   |              |
|                      |  | DENSITY CORRECTION (+ No. 4) -   | AASHTO T 224 |
| 13. Dry              | Wt. of + No  | 13. Dry Wt. of + No. 4 Material (1g)   |              |
| 14. Dry              | Wt. of Tota  | 14. Dry Wt. of Total Sample (1g) from TD-250                                     |              |
| 15. % c              | of + No. 4 M                                       | 15. % of + No. 4 Material (P <sub>c</sub> ) (0.1%) (line 13/ line 14) x 100      |              |
| 16. % c              | of - No. 4 Ma                                      | 16. % of - No. 4 Material (P <sub>f</sub> ) (0.1%) 100 - line 15                 |              |
| 17. Adj              | . Moist. (MC                                       | 17. Adj. Moist. (MC <sub>f</sub> ) (0.001) (line 5 - (0.02 x line 15)) / line 16 |              |
| 18. D <sub>f</sub> I | 18. D <sub>f</sub> Denominator <sub>1</sub> (0.01) | r <sub>1</sub> (0.01) (line 6 x line 15) / 162.24                                |              |
| 19. D <sub>f</sub> [ | 19. D <sub>f</sub> Denominator (0.01)              | r (0.01) 100 - line 18   |              |
| 20. D <sub>f</sub> N | 20. D <sub>f</sub> Numerator (0.1)                 | 0.1) line 6 x line 16  |              |

Note 1: No +No. 4 material, % compaction = (line 6 / line 8)  $\times$  100. If +No. 4 material, then % compaction = (line 7 / line 8)  $\times$  100 16 - 2

Signed:

# Rev. 10/02 . 10/02 INDIANA DPEARTMENT OFTRANSPORTATION DAILY SUMMARY OF NUCLEAR DENSITY TESTS FOR COMPACTED AGGREGATE

| Contra               | Contract Number                                |   | Project Number   |                     | Road Number |  |
|----------------------|--|---|--|---------------------|-------------|--|
| Date:                |  |   |  |                     |             |  |
| -ield T              | =ield Test Number                              |   |  |                     |             |  |
|                      |  | Station   |  |                     |             |  |
| Location             | Location of Tests                              | Reference to Centerline   | erline   |                     |             |  |
|                      |  | Elevation or Lift Number  | mber   |                     |             |  |
| Compa                | Compacted Depth of Lift                        | of Lift   |  |                     |             |  |
| Method               | Method of Compaction                           | ction   |  |                     |             |  |
| Numbe                | Number of Passes with Roller                   | with Roller   |  |                     |             |  |
|                      | 1. Daily 8                                     | Daily Standard Count  |  |                     |             |  |
|                      | 2. Wet D                                       | Wet Density From Gauge (0.1 lbs./ft³)   | (0.1 lbs./ft³)   |                     |             |  |
|                      | 3. Dry De                                      | ensity From Gauge (   | Dry Density From Gauge (for information only)            |                     |             |  |
|                      | 4. Percei                                      | nt Moisture from Ga   | Percent Moisture from Gauge (for information only)       |                     |             |  |
| uge                  | 5. Percei                                      | Percent Moisture (0.1%)   | from TD 250  |                     |             |  |
| · Gaı                | 6. Dry De                                      | ensity (0.1 lbs./ft³)   | Dry Density (0.1 lbs./ft³) line 2 / (1+ (line 5 / 100))  |                     |             |  |
| clear                | 7. Adj. D                                      | ry Dens. (-3/4") (0.1   | Adj. Dry Dens. (-3/4") (0.1 lbs. /ft³) line 20 / line 19 |                     |             |  |
| Nuc                  | 8. Maxim                                       | um Dry Density fror   | Maximum Dry Density from Lab or 1 Pt. Proctor            |                     |             |  |
|                      | 9. Adjust                                      | ed % Moisture (-3/4   | Adjusted % Moisture (-3/4") (0.1%) line 17 x 100         |                     |             |  |
|                      | 10. Optimi                                     | Optimum Moisture (0.1%)   |  |                     |             |  |
|                      | 11. Percei                                     | Percent Compaction (1%)   | (line 7 / line 8) x 100                                  |                     |             |  |
|                      | 12. Percei                                     | Percent Compaction Required (1%)  | iired (1%)   |                     |             |  |
|                      |  | Pass/ Fail  |  |                     |             |  |
| Test                 | Test Remarks                                   | Lab Sample Number   | er   |                     |             |  |
|                      |  | Material Description  | ח  |                     |             |  |
|                      |  | DENSITY   | Y CORRECTION (+ 3/4") -                                  | <b>AASHTO T 224</b> | 4           |  |
| 13. Dry              | / Wt. of + 3/                                  | Dry Wt. of + 3/4" Material (1g)   |  |                     |             |  |
| 14. Dry              | Wt. of Tota                                    | <ol> <li>Dry Wt. of Total Sample (1g)</li> </ol>                                | from TD-250  |                     |             |  |
| 15. % c              | of + 3/4" Ma                                   | 15. % of + $3/4$ " Material (P <sub>c</sub> ) (0.1%) (I                         | (line 13/ line 14) x 100                                 |                     |             |  |
| 16. % c              | of - 3/4" Mat                                  | 16. % of - 3/4" Material (P <sub>t</sub> ) (0.1%) 10                            | 100 - line 15  |                     |             |  |
| 17. Adj              | . Moist. (Mo                                   | 7. Adj. Moist. (MC <sub>f</sub> ) (0.001) (line 5 - (0.02 x line 15)) / line 16 | )2 x line 15)) / line 16                                 |                     |             |  |
| 18. D <sub>f</sub> I | D <sub>f</sub> Denominator <sub>1</sub> (0.01) |   | (line 6 x line 15) / 162.24                              |                     |             |  |
| 19. D <sub>f</sub> [ | D <sub>f</sub> Denominator (0.01)              |   | 100 - line 18  |                     |             |  |
| 20. D, 1             | 20. D <sub>f</sub> Numerator (0.1)             |   | line 6 x line 16   |                     |             |  |

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Signed:

| TD 250  |       |
|---------|-------|
| Revised | 10/02 |

### INDIANA DEPARTMENT OF TRANSPORATION

| DAILY SUMMARY | OF MOISTURE | DETERMINATION | LTESTS |
|---------------|-------------|---------------|--------|

| Contract No. | <del></del> |
|--------------|-------------|
| Project No.  |             |

Road No.

| 1 -  |  |  |  |
|------|--|--|--|
| ate: |  |  |  |
| aic. |  |  |  |

### ITM 506<sup>1</sup>

| TI IVI 306                                   |  |  |                    |
|--|--|--|--------------------|
| Test Number                                  |  |  | Minimum Sample Wt. |
| Station                                      |  |  | 1000 g             |
| 1. Wt. of Pan & Wet Material (W1) (1 g)      |  |  |                    |
| 2. Wt. of Pan & Dry Material (W2) (1 g)      |  |  |                    |
| 3. Weight of Moisture (1 g) Line 1 - Line 2  |  |  |                    |
| 4. Weight of Pan (W3) (1 g)                  |  |  |                    |
| 5. Wt. of Dry Material (1 g) Line 2 - Line 4 |  |  |                    |
| % Moisture (0.1%) (Line 3/ Line 5) x 100     |  |  |                    |

### **AASHTO T-255**<sup>2</sup>

| Test Number                                 |  | Minimum Sample Wts.                       |
|---|--|---|
| Station                                     |  | #8 Stone (ITM 403) <sup>3</sup><br>5000 g |
| Weight of Wet Sample (W) (1 g)              |  | #23 Sand (ITM 403) <sup>3</sup><br>5000 g |
| 2. Weight of Dried Sample (D) (1 g)         |  | #4 B Borrow<br>500 g                      |
| 3. Weight of Moisture (1 g) Line 1 - Line 2 |  | 53 Compacted Agg.<br>4000 g               |
| % Moisture (0.1%) (Line 3/ Line 2) x 100    |  | 73 Compacted Agg.<br>3000 g               |

<sup>&</sup>lt;sup>1</sup> ITM 506 defines constant weight as the weight at which further drying at 15 minute intervals does not alter the weight.

<sup>2</sup> AASHTO 255 defines constant weight as when further heating causes, or would cause, less that 0.1 percent additional loss in weight.

<sup>3</sup> ITM 403 defines constant weight as when the sample weight decreases by less than 5 g over 5 minutes of heating.

Form IT-625 B Revised 10/02

### INDIANA DEPARTMENT OF TRANSPORTATION

### DAILY SUMMARY OF SAND IN-PLACE DENSITY TESTS

| CON                   | TRACT NO.    | PROJECT NO.  | ROAD NO  | )              | DATE  | WEATHER_                 |           |   |
|-----------------------|--------------|--|----------|----------------|---|--------------------------|-----------|---|
|                       |              | Field Test Number  | <u> </u> |                | CONE CORRECTION (C <sub>c</sub> )   | <u> </u>                 |           |   |
|                       |              |  |          |                | , ,,  |                          |           | / |
|                       |              | Station  |          | m <sub>1</sub> | Wt. of Apparatus Filled w/ Sand (0.01 lbs.)                               |                          |           |   |
| ocation o             | f Tests      | Reference to Centerline  |          | $m_2$          | Wt. of Apparatus & Remaining Sand   |                          |           |   |
|                       |              | Elevation or Lift Number   |          | C <sub>c</sub> | Cone Correction (0.01 lbs.) = m <sub>1</sub> -m <sub>2</sub>              |                          |           |   |
| Compacte              | d Depth of L | Lift   |          |                | BULK DENSITY OF SAND (D   | В)                       | $\rangle$ |   |
| Method of             | Compaction   | ı  |          | m <sub>3</sub> | Wt. of Apparatus Filled w/ Sand (0.01 lbs.)                               |                          |           |   |
| No. of Pas            | ses with Ro  | ller   |          | m <sub>4</sub> | Wt. of Apparatus & Remaining Sand   |                          |           |   |
| р                     | 1. Wet W     | t. of Mat. from Hole & Pan (0.01 lbs.)   |          | V <sub>c</sub> | Volume of Calibration Container (0.0001ft <sup>3</sup>                    | )                        |           |   |
| Compacted<br>Material | 2. Wt. Of    | Pan (0.01 lbs.)  |          | D <sub>B</sub> | Blk. D. Sand (0.1 lbs./ft <sup>3</sup> )= $(m_3-m_4-C_c) / V_c$           |                          |           |   |
| omp<br>Mat            | 3. Moist \   | Vt. of Mat. (M <sub>ws</sub> ) (0.01 lbs.) line 1- line 2                            |          |                | % MOISTURE - AAS  | HTO T 255 <sup>(1)</sup> |           |   |
| O                     | 4. Dry Wt    | of Mat. (M <sub>DS</sub> ) (0.01 lbs.) line 3 /(1+(MC <sub>T</sub> /100))            |          | W              | Wt. of Original Sample (1g)   |                          |           |   |
|                       | 5. Initial \ | Vt. of Filled Apparatus (m <sub>5</sub> ) (0.01 lbs.)                                |          | D              | Wt. of Dried Sample (1g)  |                          |           |   |
|                       | 6. Final V   | Vt. of Apparatus & Sand (m <sub>6</sub> ) (0.01 lbs.)                                |          | МСт            | % Moist.( 0.1%) = 100(W - D) / D  |                          |           |   |
| Sand<br>Cone          | 7. Net W     | . of Sand (0.01 lbs.) line 5 - line 6  |          |                | + No. 4 CORREC  | CTION <sup>(2)</sup>     |           |   |
|                       | 8. Wt. of    | Sand in Hole (0.01 lbs.) line 7 - C <sub>c</sub>                                     |          | 16. D          | ory Wt. of + No. 4 Material (0.01 lbs.)                                   |                          |           |   |
|                       | 9. Vol. of   | Test Hole (V <sub>H</sub> ) (0.0001 ft <sup>3</sup> ) line 8 / <b>D</b> <sub>B</sub> |          | 17. %          | 6 +No. 4 Mat. (P <sub>c</sub> ) (0.1%) (line 16 / line 4) x 100           |                          |           |   |
| I0. Perce             | nt Moisture  | (0.1%) MC <sub>T</sub> or line 19 x 100  |          | 18. %          | 6 - No. 4 Mat. (P <sub>f</sub> ) (0.1%) 100 - line 17                     |                          |           |   |
| 11. Procto            | or Optimum   | Moisture (0.1%)  |          | 19. N          | $MC_f (0.001)$ (MC <sub>T</sub> - (0.02 x line 17))/line 18               |                          |           |   |
| 12. Dry D             | ensity of Ma | terial (D <sub>D</sub> ) (0.1 lb./ft <sup>3</sup> ) line 4 / line 9 or line 23       |          | 20. D          | Ory Density (D <sub>d</sub> ) (0.1 lbs./ft <sup>3</sup> ) line 4 / line 9 |                          |           |   |
| 13. Procto            | or Maximum   | Dry Density (lbs./ft³)   |          | 21. D          | <sub>f</sub> Denominator (0.01) (line 20 x line 17)/162.24                |                          |           |   |
| 14. Perce             | nt of Maxim  | um Dry Density (1%) (line 12 / line 13) x 100  |          | 22. D          | Numerator (0.1) line 20 x line 18   |                          |           |   |
| I5. Perce             | nt of Maxim  | um Dry Density Required  |          | 23. A          | dj. Dry Den.( $D_f$ ) (0.1 pcf) line 22/(100 - line 21)                   |                          |           |   |
|                       |              | Pass/Fail  |          | Rema           | arks:   | <u> </u>                 |           |   |
| Test F                | Remarks      | Lab Sample No.   | '        |                |   |                          |           |   |
|                       |              | Material Description   |          |                |   |                          |           |   |
|                       |              | 1  |          |                |   |                          |           |   |

Note 1: AASHTO T 255-Total Evaporable Moisture Content of Aggregate by Drying used for sand & B-Borrow sand.

Note 2: In accordance with AASHTO T 224-Correction for Coarse Particles in the Soil Compaction Test. Assumes a moisture of 2% and a specific gravity of 2.60

Signed

Form IT-625 Revised 10/02

### INDIANA DEPARTMENT OF TRANSPORTATION

### DAILY SUMMARY OF SOIL IN-PLACE DENSITY TESTS

| CONT         | RACT NO.     | PROJECT NO.  | ROAD NO. |                    | DATE   | WEATHER _          |     |   |
|--------------|--------------|--|----------|--------------------|--|--------------------|-----|---|
|              |              | Field Test Number  |          |                    | CONE CORRECTION (C <sub>c</sub> )  |                    |     |   |
|              |              | Station  |          | m <sub>1</sub>     | Wt. of Apparatus Filled w/ Sand (0.01 lbs.)                                    |                    |     |   |
| Location of  | Tests        | Reference to Centerline  |          | m <sub>2</sub>     | Wt. of Apparatus & Remaining Sand  |                    |     |   |
|              |              | Elevation or Lift Number   |          | C <sub>c</sub>     | Cone Correction (0.01 lbs.) = m <sub>1</sub> -m <sub>2</sub>                   |                    |     |   |
| Compacted    | Depth of L   | ift  |          |                    | BULK DENSITY OF SAND (D <sub>B</sub> )   |                    | X   |   |
| Method of 0  | Compaction   | 1  |          | m <sub>3</sub>     | Wt. of Apparatus Filled w/ Sand (0.01 lbs.)                                    |                    | / \ | \ |
| No. of Pass  | ses with Ro  | ller   |          | m <sub>4</sub>     | Wt. of Apparatus & Remaining Sand  |                    |     |   |
|              | 1. Wet Wt    | . of Mat. from Hole & Pan (0.01 lbs.)  |          | V <sub>c</sub>     | Volume of Calibration Container (0.0001ft <sup>3</sup> )                       |                    |     |   |
| Soil         | 2. Wt. Of I  | Pan (0.01 lbs.)  |          | D <sub>B</sub>     | Blk. D. Sand (0.1 lbs./ft $^{3}$ )= (m $_{3}$ -m $_{4}$ -C $_{c}$ ) / V $_{c}$ | /                  | /   | \ |
| 5011         | 3. Moist W   | /t. of Mat. (M <sub>ws</sub> ) (0.01 lbs.) line 1- line 2                            |          |                    | % MOISTURE - ITM   | 506 <sup>(1)</sup> |     |   |
|              | 4. Dry Wt.   | of Mat. (M <sub>DS</sub> ) (0.01 lbs.) line 3 /(1+(MC <sub>T</sub> / 100))           |          | W1                 | Wt. of Pan & Wet Soil (1g)   |                    |     |   |
|              | 5. Initial W | /t. of Filled Apparatus (m <sub>5</sub> ) (0.01 lbs.)                                |          | W2                 | Wt. of Pan & Dry Soil (1g)   |                    |     |   |
|              | 6. Final W   | t. of Apparatus & Sand (m <sub>6</sub> ) (0.01 lbs.)                                 |          | W3                 | Wt. of Pan (1g)  |                    |     |   |
| Sand<br>Cone | 7. Net Wt.   | of Sand (0.01 lbs.) line 5 - line 6  |          | MC <sub>T</sub>    | % Moist.( 0.1%) = ((W1 - W2) / (W2 - W3)) x 100                                |                    |     |   |
|              | 8. Wt. of S  | Sand in Hole (0.01 lbs.) line 7 - C <sub>c</sub>                                     |          |                    | + No. 4 CORRECTI   | ON <sup>(2)</sup>  |     |   |
|              | 9. Vol. of   | Test Hole (V <sub>H</sub> ) (0.0001 ft <sup>3</sup> ) line 8 / <b>D</b> <sub>B</sub> |          | 16. Dı             | ry Wt. of + No. 4 Material (0.01 lbs.)   |                    |     |   |
| 10. Percer   | nt Moisture  | (0.1%) MC <sub>T</sub> or line 19 x 100  |          | 17. %              | +No. 4 Mat. (P <sub>c</sub> ) (0.1%) (line 16 / line 4) x 100                  |                    |     |   |
| 11. Procto   | r Optimum    | Moisture (0.1%)  |          | 18. %              | - No. 4 Mat. (P <sub>f</sub> ) (0.1%) 100 - line 17                            |                    |     |   |
| 12. Dry De   | ensity of Ma | terial ( $D_D$ ) (0.1 lb./ft <sup>3</sup> ) line 4 / line 9 or Line 23               |          | 19. M              | C <sub>f</sub> (0.001) (MC <sub>T</sub> - (0.02 x line 17))/line 18            |                    |     |   |
| 13. Procto   | r Maximum    | Dry Density (lbs./ft³)   |          | 20. Dı             | ry Density (D <sub>d</sub> ) (0.1 lbs./ft <sup>3</sup> ) line 4 / line 9       |                    |     |   |
| 14. Percer   | nt of Maxim  | um Dry Density (1%) (line 12 / line 13) x 100  |          | 21. D <sub>f</sub> | Denominator (0.01) (line 20 x line 17)/162.24                                  |                    |     |   |
| 15. Percer   | nt of Maxim  | um Dry Density Required  |          | 22. D <sub>f</sub> | Numerator (0.1) line 20 x line 18  |                    |     |   |
|              |              | Pass/Fail  |          | 23. Ad             | dj. Dry Den.(D <sub>f</sub> ) (0.1 pcf) line 22/(100 - line 21)                |                    |     |   |
| Test R       | emarks       | Lab Sample No.   |          | Rema               | rks:   |                    |     |   |
|              |              | Material Description   |          |                    |  |                    |     |   |
|              |              |  |          |                    |  |                    |     |   |

Note 1: ITM 506-Field Determination of Moisture Content of Soils used for all cohesive soils

Note 2: In accordance with AASHTO T 224-Correction for Coarse Particles in the Soil Compaction Test. Assumes a moisture of 2% and a specific gravity of 2.60

Form TD-320 d Revised 10/02

### INDIANA DEPARTMENT OF TRANSPORTATION

### DAILY SUMMARY OF IN-PLACE DENSITY TESTS (+3/4" Material)

| CONT                  | RACT NO.     | PROJECT NO.  | ROAD NO. |                    | DATE   | WEATHER _  |   |   |
|-----------------------|--------------|--|----------|--------------------|--|--|---|---|
|                       |              | Field Test Number  |          | 1                  | CONE CORRECTION (C <sub>c</sub> )  |  |   |   |
|                       |              | Station  |          | m₁                 | Wt. of Apparatus Filled w/ Sand (0.01 lbs.)                              |  |   |   |
| Location              | of Tests     | Reference to Centerline  |          | <u> </u>           | Wt. of Apparatus & Remaining Sand  | +  |   |   |
|                       |              | Elevation or Lift Number   |          | l                  | Cone Correction (0.01 lbs.) = m <sub>1</sub> -m <sub>2</sub>             | +  |   |   |
| Compacted             | d Depth of L |  |          |                    | BULK DENSITY OF SAND (D  | B)   | \ |   |
| Method of (           | Compaction   | 1  |          | m <sub>3</sub>     | Wt. of Apparatus Filled w/ Sand (0.01 lbs.)                              |  |   |   |
| No. of Pass           | ses with Ro  | ller   |          | m <sub>4</sub>     | Wt. of Apparatus & Remaining Sand  |  |   |   |
|                       | 1. Wet Wt    | of Material from Hole & Pan (0.01 lbs.)  |          | V <sub>c</sub>     | Volume of Calibration Container (0.0001ft <sup>3</sup> )                 |  |   |   |
| actec<br>rial         | 2. Wt. Of I  | Pan (0.01 lbs.)  |          | <b> </b>           | Blk. D. Sand (0.1 lbs./ft <sup>3</sup> )= $(m_3-m_4-C_c) / V_c$          | <del>                                     </del> |   |   |
| Compacted<br>Material | 3. Moist W   | /t. of Mat. (M <sub>ws</sub> ) (0.01 lbs.) Line 1- Line 2                            |          |                    | % MOISTURE (AAS  | HTO T255)  |   | · |
| ŏ <sup>–</sup>        | 4. Dry Wt.   | of Mat. (M <sub>DS</sub> ) (0.01 lbs.) Line 3 /(1+(MC <sub>T</sub> / 100))           |          | W                  | Wt. of Original Sample (1g)  |  |   |   |
|                       | 5. Initial V | Vt. of Filled Apparatus (m <sub>5</sub> ) (0.01 lbs.)                                |          | D                  | Wt. of Dried Sample (1g)   |  |   |   |
|                       | 6. Final V   | /t. of Apparatus & Sand (m <sub>6</sub> ) (0.01 lbs.)                                |          | MC <sub>T</sub>    | % Moisture( 0.1%) = 100(W - D) / D                                       |  |   |   |
| Sand<br>Cone          | 7. Net Wt    | of Sand (0.01 lbs.) Line 5 - Line 6  |          |                    | + 3/4" CORREC  | TION <sup>(1)</sup>                              |   |   |
| 202                   | 8. Wt. of \$ | Sand in Hole (0.01 lbs.) Line 7 - C <sub>c</sub>                                     |          | 16. Dı             | y Wt. of +3/4" Material (0.01lbs.)                                       |  |   |   |
|                       | 9. Vol. of   | Test Hole (V <sub>H</sub> ) (0.0001 ft <sup>3</sup> ) Line 8 / <b>D</b> <sub>B</sub> |          | 17. %              | $+3/4$ " Mat.( $P_c$ ) (0.1%) (line 16 / line 4) x 100                   |  |   |   |
| 10. Percer            | nt Moisture  | (0.1%) Line 19 x 100   |          | 18. %              | -3/4" Mat. (P <sub>f</sub> ) (0.1%) 100-line 17                          |  |   |   |
| 11. Procto            | r Optimum    | Moisture (0.1%)  |          | 19. M              | C <sub>f</sub> (0.001) (MC <sub>T</sub> - (0.02 x line 17)) / line 18    |  |   |   |
| 12. Dry De            | ensity of Ma | t.(D <sub>D</sub> ) (0.1 lb./ft <sup>3</sup> ) Line 23                               |          | 20. Dı             | ry Density (D <sub>d</sub> ) (0.1 lbs./ft <sup>3</sup> ) line 4 / line 9 |  |   |   |
| 13. Procto            | r Maximum    | Dry Density (lbs./ft³)   |          | 21. D <sub>f</sub> | Denominator (0.01) (line 20 x line 17) / 162.24                          |  |   |   |
| 14. Percer            | nt of Maxim  | um Dry Density (1%) (Line 12 / Line 13) x 100  |          | 22. D <sub>f</sub> | Numerator (0.1) line 20 x Line 18  |  |   |   |
| 15. Percer            | nt of Maxim  | um Dry Density Required  |          | 23. Ad             | dj. Dry Den.( $D_f$ ) (0.1 pcf) line 22/(100 - line 21)                  |  |   |   |
|                       |              | Pass/Fail  |          | Rema               | rks:   |  |   |   |
| Test R                | emarks       | Lab Sample No.   |          |                    |  |  |   |   |
|                       |              | Material Description   |          |                    |  |  |   |   |
|                       |              |  |          |                    |  |  |   |   |

Note 1: In accordance with AASHTO T 224-Correction for Coarse Particles in the Soil Compaction Test. Assumes a moisture of 2% and a specific gravity of 2.60.

Revised 10/02

### INDIANA DEPARTMENT OF TRANSPORTATION AASHTO T 272-MAXIMUM DENSITY OPTIMUM MOISTURE BY ONE-POINT METHOD

| Contract Number                                 |                               | Road Number |  | Date |  |
|---|-------------------------------|-------------|--|------|--|
| Project Number                                  |                               |             |  |      |  |
| Test Number                                     |                               |             |  |      |  |
| Station   |                               |             |  |      |  |
| 1. Wet Weight of Compacted Soil & Mold (        | 0.01 lbs.) Weigh              |             |  |      |  |
| 2. Weight of Mold (0.01 lbs.)                   | Weigh                         |             |  |      |  |
| 3. Wet Wt. of Compacted Soil (0.01 lbs.)        | Line 1 - Lin                  | e 2         |  |      |  |
| 4. Wet Density of Compacted Soil (0.1 lbs.      | /ft <sup>3</sup> ) Line 3 x 3 | 0           |  |      |  |
| Percent Moisture (0.1%)                         | ITM 506                       |             |  |      |  |
| Maximum Dry Density (0.1 lbs./ft <sup>3</sup> ) | From Curv                     | re e        |  |      |  |
| Optimum Moisture Percent (0.1%)                 | From Curv                     | re e        |  |      |  |
| Curve Number                                    | From Curv                     | re e        |  |      |  |
| ITM 506   | •                             | <u> </u>    |  |      |  |
| 1. Wt. of Pan & Wet Soil (W1) (1g)              | Weigh                         |             |  |      |  |
| 2. Wt. of Pan & Dry Soil (W2) (1g)              | Weigh                         |             |  |      |  |
| 3. Wt. of Moisture (1g)                         | Line 1 - Lin                  | e 2         |  |      |  |
| 4. Wt. of Pan (W3) (1g)                         | Weigh                         |             |  |      |  |
| 5. Wt. of Dry Material (1g)                     | Line 2 - Lin                  | e 4         |  |      |  |
| % Moisture (0.1%)                               | Line 3 / Line 5 x 100         |             |  |      |  |
| Signed:   |                               |             |  |      |  |

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